

by

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1. INTRODUCTION

Uganda is a landlocked country but endowed with plentiful freshwater resources. Of the total 241,000 Km² area of the country, about 42,000 Km² or 18% is covered by water. There are some 165 lakes in the country of which the largest and the most productive are Lakes Victoria, Kyoga, Albert, Edward and George.

The national waters contain an impressive array of fish species, over 90 in all. This count does not include Haplochromis complex, which itself is made up of more than 150 species.

Overall potential annual yield from these waters has not been precisely determined, though a generally accepted estimate is 300,000 metric tons, or a level that is about 33% higher than the current estimated annual harvest. It is likely that substantial increases in production could be achieved without risk to the continued viability of the fishery, but a major effort needs to be put into the task of assessing the exact state of the stocks, the actual harvest potentials they can sustain in the long run and the management of both the fish stocks and the fisheries. Additional potential remains to be tapped through the rehabilitation and further development of aquaculture, enhanced natural production systems and the exploitation of hitherto underutilized aquatic resources.

The total commercial catch of fish in 1989 was estimated at 213,000 metric tonnes which is a big increase over the catches prevailing twenty years ago. The substantial increase in the catch levels in the recent years owes in large part to the upsurge of the introduced Nile Perch and Nile tilapia populations

in Lakes Victoria and Kyoga. The evolution of these fisheries has been a remarkable success story in terms of employment, earnings and production within the industry.

However, as the rate of exploitation continues to increase, many important in shore stocks are becoming heavily or over exploited. Open-access into the fisheries prevails on nearly all the lakes except Lakes George, Edward and Wamala which are controlled legally. The undesirable consequences of overexploitation are generally observed in terms of production loss per unit of effort, diminishing revenues, the use of redundant inputs and decreasing profitability.

We have, over the years since 1951 introduced some regulations under the now Fish and Crocodiles Act of 1964 aimed at controlling wither the quantitative or the qualitative dimensions of fishing effort. These, however, have seldom been introduced in the context of an explicitly elaborated management plan. Furthermore, their application has generally been quite ineffective due to very limited enforcement capabilities.

Since industrial commercial fisheries have never been extensively developed in Ugandan waters, the prevailing regulations deal with control of effort in the small-scale fisheries. Even here, little effective control is presently exerted.

Pollution is another area which has a direct impact on fisheries. The population growth in Uganda, as elsewhere, is being accompanied by a steep increase in urbanization, industrial and agricultural land use. This is entailing a tremendous increase in discharge of a wide variety of pollutants to receiving water bodies, and may already be causing undesirable effects on the different components of the aquatic environment and on fisheries. Remedial actions are necessary to prevent the pollution of the aquatic systems. A provision is therefore proposed in the fisheries regulations so that it can help the Fisheries Department to bring pollution problems to the attention of the Government and the public.

2. FISHERIES MANAGEMENT

availability?
use of
available stocks

Effective management is required if the detrimental consequences of overfishing are to be avoided. Management can be defined as the direct or indirect regulation of effective fishing effort in order to achieve an overall objective that reflects societal priorities. These, in Uganda, include (a) maximization of production to increase animal protein production and per capita consumption; (b) maximization of net earnings from fisheries production over and above what it costs society to produce; (c) maximization of employment opportunities, (d) reduction in post-harvest losses; (e) maximization of foreign exchange earnings from surplus production traded internationally.

Knowledge of the various aspects of the artisanal fisheries and their socio-economic characteristics is vital to management. This facilitates the determination of the regulatory measures most appropriate in terms of probable impact and applicability. The fishing industry in this country is characterised by being primarily artisanal in nature, featuring legions of small-scale operators working with gill nets. Most of the fishing crafts on the major lakes are planked canoes. A nation wide total of some 16,500 canoes was estimated in 1988, with about 20% of the units being equipped with outboard engines. Industrial trawling operations are just beginning as pilot schemes. This is in the form of a large-scale pair trawling in Lake Victoria under the Sino-Uganda joint venture using two sets of pair trawlers. Other characteristics of the dominant artisanal fisheries include limited fishing range, composite ownership of fishing units, relative lack of development resources available to fisherfolk, extensive social and financial linkages between the harvesting sector and the post-harvest sector, resistance to change, pamperization of fishermen and the suspicion and fear of government authorities as these are often identified with law enforcement and tax collection. In general, variable management measures can be imposed by regulations or as conditions for licence. The

The Fish and Crocodiles Act provides for both. The following management tools were considered before formulating the existing law:

(a) Catch Quotas

Catch quotas aim at improving the productivity of fish stocks through the direct control of fishing mortality. Theoretically any catch quota can be set and enforced, thereby maintaining the stock at the desired level of production. However, the socio-economic consequences of an overall catch quota are highly negative. Despite their theoretical appeal, individual quotas are difficult to put into practice because of the natural fluctuations of the stocks, the fluidity of the catch, and the fluidity and dispersal of the fishing fleet. Moreover, monitoring this system is extremely costly with the artisanal fishermen scattered in remote communities.

(b) Closed Seasons and Areas

These methods aim at improving the productivity of the resource by ensuring the uninterrupted spawning and growth of juvenile fish. They also aim at controlling total effort and catch. Despite the inconvenience these methods provide, they are generally easier to enforce. The Fish and Crocodiles Act provides for closed areas in Lake Albert. Closed seasons has not been legislated in Uganda.

(c) Gear Ban

An overall ban on the use of some detrimental gear such as mosquito nets, cast nets and beach seines can be quite effective in protecting juvenile stocks. Gear ban is another method of area closure, e.g. the paired trawlers in Lake Victoria are prohibited from operating in near-shore areas reserved for artisanal fishermen. This is a useful tool for resolving conflicts between mutually incompatible types of gears such as trawls and stationery gear, although it is rather difficult to enforce. The use of beach seines, cast nets and surrounding nets and the method of beating water to force fish into nets, night fishing and the use of explosives are banned in Uganda by law.

(d) Mesh Size Regulation

Mesh size regulation aims at achieving and maintaining the most productive age structure of the stocks by allowing immature fish to grow larger and more valuable and to possibly reproduce before they are caught. With scattered and fluid multi-gear and multi-species fisheries, enforcement is likely to be difficult and costly due to opposition by fishermen once the profitability of fishing has become very low. This method is however provided for in the Laws of Uganda where fishing is done by gill nets and targeted on the exploitation of Nile tilapia and Nile Perch.

(e) Limited Entry and Licensing

Licence limitation programmes as on Lakes Edward, George, Wamala and Nakivule and Kazinga Channel attempt to control harvesting pressure by restricting access to stocks through issuing a limited number of fishing vessel licences. They aim at improving the yield and economic performance of the fishery through direct control of effort expansion or removal of excessive fishing effort. But the dispersion, fluidity and remoteness of small-scale fisheries may reduce the effectiveness of limited entry schemes, as potential entrants failing to obtain a licence may easily engage in illegal fishing. Licensing can however be introduced to assess and monitor fishing effort, and may be used partially to control it eventually.

(f) Taxes on Effort or Catch and Fixed Prices

Economic controls, such as income taxes, special licences and fixed prices, aim at indirectly controlling fishing effort by directly removing the economic surplus which encourages over-expansion of effort in the first place. The objective here is to dissuade fishermen from expanding effort beyond a determined optimal level. In over-exploited fisheries, the temporary increase in costs which such measures entail makes them difficult to accept if small-scale fishermen barely earn subsistence incomes. Economic controls should therefore be used before a fishery reaches over-fishing. Income tax and special licences are already being used in Uganda but indiscriminately. For management purposes, these taxes or fees must be applied in a more discriminatory manner, ../6

although it is often difficult to implement.

(g) Territorial Rights

The allocation of the fisheries through territorial rights - such as leasehold arrangements, franchises the allocation of ownership over an area or a stock - aims at creating the appropriate environment for self-management through the establishment of private or community ownership over common property resources. Those who are granted exclusive right through licences are expected to engage in self - management in order to maximize the community's net benefits. But in order to ensure that their management objectives are complementary to the national objectives for the resources, it is essential that the granting of exclusive territorial rights are associated with the maintenance by the government of some control mechanism to influence how the fisheries are to be managed. In this way enforcement could be carried out by community and state representatives jointly.

(h) Creation of Alternatives

Where the fisheries of the lakes remain moderately exploited, there is room for government to encourage the transfer of effort to new fisheries or other lakes, such as from Lakes George and Edward to Lake Albert or Lake Victoria. Creation of employment alternatives outside the fisheries sector could also be sought.

(i) Simultaneous Use of Management Instruments

For both biological and socio-economic reasons, the simultaneous use of several management instruments may be necessary. This will, of course imply higher enforcement requirements and more complex monitoring. Experience, however, show that fishermen are more likely to accept a range of less constraining measures than the strict enforcement of one major management tool.

3. FISHERIES LEGISLATION

Fisheries legislation is basically a tool that by itself it accomplishes nothing, but with a policy to direct it and an executive to apply it, it can be a powerful tool for fisheries manage-

ment. The fisheries management plans described earlier provide a useful framework for policy formulation and grant the powers required for implementation.

The basic policy underlying our existing fisheries legislation may be summed up as to manage the national fishery resources in order to produce the maximum net benefits. This is implied by Government control over the resource, which implies an obligation on the part of Government to manage the fisheries resources for the common benefit. The prevalence of fishing as an economic activity means that the common benefit must be reckoned largely in economic terms. The benefits that our national fisheries provide accrue at different levels - to the fishermen, the trader, the consumer, the producer of fishing and fish processing inputs, the fish processors, the public treasury. Generally, a country may restrict the fishing effort to limit costs and increase catch per fisherman. It may improve high fees to capture the benefits for the country. It may restrict exports to maintain supplies and reduce prices to consumers, or it may remove barriers to fishing to increase employment. On the other end, excess fishing effort represents a cost but if it represents local inputs and labour, the employment created may be considered as benefit. Where the cost of fishing represents imported fishing inputs, it will be a real cost that the country must weigh against the benefits produced.

Any regulatory measures must therefore provide a framework for defining and modifying objectives for different situations and must take account of enforcement. The nearly unlimited variety of specific regulations may tend to obscure the essential simplicity of the alternatives. Mortality in a fishery is functionally related to four factors: the number of operating economic units, their catching power, their total fishing time and their spatial distribution during the fishing period. So effective controls based on reducing fishing mortality must operate through one or more of these factors.

(a) Control of Access

The basic function of fisheries regulation is the control of access to the fishery. The typical means of granting access and controlling its terms is through a licence, often upon payment of a fee.

(i) Nationality

Definition of citizenship is the usual starting point and it is often satisfactory for single owner fishing craft. But it is not so easy to assign nationality to a vessel owned by a company, which itself may be owned by other companies and by persons of different nationalities.

The Fish and Crocodiles Act deals with this by requiring that "no person who is not a citizen of Uganda, shall fish in any waters of Uganda for the purpose of obtaining fish for sale unless he holds a valid specific licence in that behalf." Further, legislation should try to deal with this problem by requiring all or a specified proportion of the company owners to be citizens or local companies, by requiring certain positions to be filled by citizens. This presents or reduces the flight of benefits that accrue from exploiting the fisheries resources out of the country. Besides, unless these provisions are backed up by tests of genuineness of local control, they are easily defeated by charter and financial arrangements which reduce the role of legal ownership and by the use of nationals and nations who lend their names to enterprises in which they have no real interests.

(ii) Licensing

The licence is a very powerful tool of fisheries management. . It is used to control access, to establish the conditions of access, as a basis for collection of fees and since it may usually be suspended or ~~revoked~~ - to discipline the licensee. A licence used in these ways should be distinguished from registration which is normally used ~~either~~ for simple record - keeping.

The Fish and Crocodiles Act provides for the possession of a

valid fishing vessel licence to fish with specified fishing gear or gears. But the unit to licensing should depend on the fishery. Usually it is the vessel as in Uganda, but should include its gears. Where gear alone (for example beach seines, traps, etc.) is especially significant, it may be suitable to licence it. Fishermen could also be licensed particularly for activities that do not require a vessel.

It is politically a serious matter to deny a licence to a national, so the usual practice is to issue one to any local applicant who pays the fee and has not disqualified himself through previous contraventions of the law on licence conditions. Limitation of licences has however been introduced in Uganda which limits the availability of fishing vessel licences on Lakes Edward, George and Wamala and on the Kazinga Channel. This was an effective and economically efficient way to limit the fishing effort.

The ability to apply conditions to fishing licences is a considerable aid to management. Special conditions can be designed for particular gear and methods of fishing. Such conditions can restrict a vessel to certain areas, require landing in a certain place, require fishing from any vessel with more specified gears than may be authorized, etc.

The foregoing would achieve the necessary restriction of fishing mortality while permitting use of the most efficient techniques known and encouraging further cost-reducing research and innovation. Controlment of fishing mortality would be accomplished by limiting the number of fishing economic units to a level where their full-time use would produce only the permitted catch.

(b) Access Fees

Fishing fees serve both to raise revenue and to ration access to fisheries. Since fisheries are valuable economic resources like a forest or a mine, it is appropriate to charge for the economic benefit conferred on the user. The level of fee that is appropriate depends on the fishery policy and management objectives. If maxi-

sing employment is the goal, a low fee should encourage the largest number to engage in fishing. If economic efficiency is the goal, a relatively high fee should help to reduce effort and thus keep costs at a relatively low proportion of the catch value. If it is desired to conserve foreign exchange, traditional fishermen can be given lower fees than those using imported inputs.

The way a fee is calculated and collected has important practical consequences. The best system is one related to the fishing vessel, the fishermen and the fishing gear if a country is interested in maximising revenues while minimising the cost of collection. This can be expressed as an annual fee for a type of vessel, a fisherman or gear or other readily ascertained characteristic. The advantages are that it is not necessary to count or value the catch, and that revenues are relatively predictable since they do not fluctuate with performance.

The kinds and levels of fees are usually established by regulation. It is possible to keep them at the correct level if they are stated in law; and even regulations require more frequent revision of fee levels than of other provisions.

(c) Management Measures

The Fishing Rules or Management measures, such as mesh size regulations, gear restrictions, minimum size regulations do derive from the fisheries plan. They often require frequent adjustment in order to fit changing conditions, so they should not be written into the Act. The exceptions are those prohibitions against use of poisons or explosives, introduction or transfer of fish, eggs or other fisheries resources and water pollution which tend to remain unvaried over long periods. Variable management measures can be imposed by regulations or as conditions for a licence. Licence conditions are especially useful for regulating new or unusual fishing methods. The following management measures are the ones often applied: catch limits, closed areas, closed seasons, gear restrictions, protected species and minimum size limitation.

Gear restrictions and minimum size limitation deserve special mention as they apply to the Fish and Crocodiles Act and are commonly used both for protective purposes (e.g. to allow juveniles to escape) and to limit efficiency (e.g. limits on number of trolls or nets per canoe, or on net length). The most common gear restriction is mesh size and/or type of gear regulation. Gear restriction must be carefully expressed in order to avoid enforcement problems. The gear to which a restriction applies must be carefully defined, as must the method of measuring meshes.

Species sizes and protected species regulations are easy to apply. With net fishing, it is more realistic to prohibit catching more than a certain proportion of undersized fish or protected species. Fishermen are often required to throw the forbidden fish back into the water.

(d) Statistics

A fisheries law should include collection and analysis of statistics among the duties of the fisheries administration. Reliable statistics on catch, effort, costs and prices are central to fisheries management and development. The law should therefore create an obligation to provide information required for fisheries statistics as well as the power to inspect catches and take samples. Small-scale fishermen who may be illiterate should be required to submit written reports, but industrial fishermen may usually be required to fill out forms, and they may be required to make reports by radio.

(e) Research

It is usually necessary to make special provision for fisheries research. A research vessel may require exemption from management measures such as mesh-size regulations. It is also usually not appropriate to subject a research vessel to the licensing procedures and fees applied to fishing vessels. It should be subject to the filling of an approved research plan and the reporting of all results both raw data and analysis. Other conditions may include

the use of local crew and researchers and provisions for disposal of catch.

(f) Pollution

Pollution causes and ~~effects~~^{efforts} call for solutions which go far beyond fisheries. In general, anti-pollution provisions in fisheries legislation have been ineffective, in ~~part~~^{part} because the Fisheries Department is not as influential as the Ministries responsible for pollution activities, in ~~part~~^{part} because fisheries legislation only intervenes to punish pollution, whereas prevention is far more effective. If there is no general environmental or quality legislation a provision in the fisheries law can at least help the fisheries department bring pollution problems to the attention of the Government and the public.

(g) Aquaculture

This is an increasingly important source of fish and it has special legal requirements. The basic provision should be access to land and water, protection against fishing by others (this is only a legal issue in public waters), control of movement of live fish (to prevent both diseases and the accidental proliferation of exotic species), control of the quality of water supply and discharge.

(h) Fish Technology (Marketing & Processing)

Marketing and processing are frequently regulated from both economic and health stand points by fisheries legislation. While both aspects may go beyond the expertise of fisheries administration, marketing and processing have important implications for management. Marketing and processing establishments may be the best place to gather statistics and improve effort controls especially if the establishments are few and the fishermen many. Similarly, installation of processing capacity must be related to sustained availability of resources.

Processing and product standards are frequently a bone of contention between fisheries, health and trade officials. Maintenance of official standards is usually required for export products. So, in the absence of other legislation of fish product standards, the fisheries law will have to include legal authority for some official to certify the quality of export products.

(i) Law Enforcement

Because of the limited means, fisheries law enforcement must be cost-effective. Rather than beginning with the problem of enforcing certain regulations, the approach should be first to revise the regulation themselves to aim at conditions that are easy to comply with and easy to enforce.

No matter how easy conditions are to comply with, certain legal powers are necessary. Many are found in general police and criminal procedure laws, but some are peculiar to fisheries. The most important, and those which have been included in the Fish and Crocodiles Act are the powers to stop and search vessels (necessary on large lakes) and inspect fish, gear and documents routinely without any suspicion of an infraction. Where crime is discovered aboard vessel, powers of seizure and arrest are required in order to prevent the culprit and his catch from sailing away. If handling and processing are regulated, which they should, the same powers to inspect establishments routinely is required. The need for other powers such as stopping and searching vehicles and buildings is no different for fisheries than for other sectors.

In the Fish and Crocodiles Act, Fisheries, police and military personnel limited to officers above a certain rank are authorized by legislation to exercise enforcement powers. This role, however, more often than not conflicts with the role of fisheries personnel as extension workers. Police and military forces could be used, but they usually lack the necessary knowledge of fisheries.

Penalties for fisheries offences include high fines and forfeiture of catches, and of vessel and gear involved in illegal fishing. Fines have two defects: their real value is eroded by inflation and the same offence will have a very different economic value when committed by a canoe fisherman than when committed by an industrial vessel. Forfeitures provide a corrective on both counts since there is a better abance of proportionality between the instruments and proceeds of a crime on one hand and its appropriate sanctions on the other.

4. FISH AND CROCODILES ACT, 1964

This Act makes provision for "the control of fishing, the conservation of fish, the purchase, sale, marketing and processing of fish, the catching of crocodiles, the sale and control of the movement of the skins thereof, and matters connected therewith." The Act also provide for the making of "fishing rules generally for the better carrying out of the purposes of this Act."

The Act is currently being applied by the Fisheries Department in the implementation of fisheries management policy of this country. It is the primary goal of the Government of Uganda to ensure that an optimal sustainable economic yield of fish is obtained from the available water bodies through scientific management of the fisheries resources. In order to achieve these management policy, it should be understood that problems in fisheries arise from the nature of fisheries resources as compared to land resources and the exploitation of these resources. Two characteristics of fisheries resources and fisheries exploitation are especially important.

(i) The Uncertain and Limited Yields

The amount of fish available for catch depends on the growth of fish stocks; but a fish stock is a living resource which itself reacts to two factors:

- the human fishing effort, which has the effect of raising the mortality rate of fish and, therefore, of decreasing the stock size of the fish;

- the environment which may increase, maintain or decrease the growth of the stocks;

(ii) The Free and Open Access Mode of Exploitation

The natural movement of fish and the tendency of fishermen to follow it preclude the placing of boundaries around it. This lack of property rights in fishing, or the free and open access to fisheries resources has the tendency to attract more capacity than required for efficient exploitation and management of the resources.

The current development policy of the Government is to ensure the supply of adequate and balanced food through the attainment of self-sufficiency and the reduction of post-harvest losses. The policy for the fisheries sector is laid out in a Blue Print for Fisheries Development in which the following objectives are set:

- (i) to step up fish production and raise per capita consumption of fish;
- (ii) to maximize employment opportunities;
- (iv) to reduce post-harvest losses;
- (v) to enhance aquatic environmental conditions
- (vi) to earn foreign exchange through export of fish and fisheries products.

→ ? *Sustain & increase the stocks*
Fisheries regulations, fisheries research and monitoring of fisheries exploitation through routine collection of fish catch and fish marketing statistics are essential if the above objectives are to be realised. The Fish and Crocodiles Act, 1964 is one

of the tools to ensure the success of the management plan.

(a) Control of Access

The Act grants access to the fisheries through the provision of fishing vessel licences to nationals; non-Ugandans are required by the Act to obtain specific or special licences before being permitted access and the use of any fishing vessel licensed under the Act (sec. 7 & 13).

It is suggested that fishermen should also be licensed as originally provided for in sec. 5 of the Act.

Similar procedure is followed in granting access to fish processing and marketing; i.e through the issue of specific licences (sec. 8).

Access to fishing, fish processing and fish marketing should be related to sustained availability of the resources, and to an optimum level and distribution of returns to social resources, to the industry and to the national economy.

(b) Access Fees

Since fisheries are valuable national economic resources like forest or a mine, it is appropriate to charge for the economic benefit conferred on the user. It is already a requirement under the Fish and Crocodiles Act for a fisherman to obtain a fishing vessel licence on the basis of a calendar year. But it is being proposed that the unit to license should extend to the types and number of gears in use on the vessel. Where gear alone, such as seines and traps, is employed, it should also be licensed. Fishermen should also be licensed particularly for activities that do not require a vessel. The amount of fees charged should be reviewed from time to time to cater for inflation, and since they also serve both to raise revenue and to ration access to fisheries.

The Act contains a number of special conditions to licences. They restrict the duration of the licences and prohibit their transfers; assignments and borrowing; they specify procedures to follow on loss etc of licence; production of licences on demand by authorised officers, punishment for false statements and the powers to restrict number of licences are additional conditions. It is being proposed here that the conditions should also restrict a vessel to specified areas, require landing in a certain place, require fishing from any vessel with more specified gears than may be authorized, restrict landing time, etc.

(c) Management Measures

i) Restrictions on Fishing Gears and Methods

The Fish and Crocodiles Act has general restrictions on types, mesh-sizes and dimensions of fishing gears and methods of fishing which are considered destructive to the fish stocks. The Commissioner for Fisheries is also empowered, with the responsible Minister, to limit the number of licences which may be issued under the Act either generally or in respect of any particular waters or area of Uganda. (sec. 22, 36, 37 and 38). The Fishing Rules provides for specific numbers, dimensions mesh-sizes and methods in respect of particular waters.

In addition to gear ban, mesh size regulations, limited entry and licensing, and closed seasons as well as a ban on destructive fishing methods, the rules should also provide for closed areas in identified breeding places, fixed prices for fish landed, and stiff punishment for violations of any of the rules.

ii) Minimum Size Regulations

The Act also contains regulations affecting age of fish and size at which fish are taken (sec. 35). But the current rules refer to Nile Tilapia (Oreochromis niloticus) and Nile Perch (Lates niloticus). It is a high time that this rule is made to bear on the other commercially important fish species

such as Hydrocynus, Alestes, Bagrus, Clarias, Parbus, and other Tilapia as well as Oreochromis species.

fii) Prohibited Fishing Methods

Use of other destructive methods such as poisons, explosives, noxious substances, lamp, light, fluorescence torch or electrical device for fishing is also forbidden under the Act except where permission has been granted by the Commissioner for Fisheries, such as in the case of light fishing for Rastrineobola. It is important that the use of these devices remains illegal under the Act.

(iv) Fishing in Dams

Permit on payment of a fee should be instituted for fishing in any dam or valley tank. (*extend to trout in rivers*)

(v) Fish Introductions

The prohibition against introduction or transfer of fish or eggs without prior consent in writing of the Commissioner for Fisheries should be extended to include other fisheries resources such as aquatic animals and plants. The same law as in sec. 14 of the Act should be strengthened against illegal the diversion of waters of any lake, river, stream, pond or private waters in which fish has been introduced.

(vi) Regulations on Fish Processing

Restriction on fish processing and marketing as specified in sec. 8 of the Act should be further strenthened to take into account fish product standards which should include legal authority to certify the quality of fish products destined to both, local and export consumer markets. In the case of industrial processing and marketing the law should require that installation of processing capacity must be related to sustained availability of the resources. This implies that expansion of capacities should not occur without the knowledge of fish stocks situation of the particular waters, and the national policy on access to the exploitation of the nation's natural resources.

(vii) Other Rules and Regulations

Laws regarding the collection of fisheries statistics, fisheries research, pollution, and aquaculture as mentioned earlier, should be catered for in the Act. Section 38(a) and 39 of the Act which covers the collection of statistics needs to be strengthened through stiffer punishment for obstructions and misinformation. Industrial fishermen should be required to fill out statistical survey forms and submit monthly returns on catch, effort, costs and prices.

While research vessels, on application, may be exempted from management measures, they should be required by laws to file approved research plans and to report results in raw data and analysed forms to the Commissioner for Fisheries. Where foreigners are involved, provisions should be made for the use of local crew and researchers.

The discharge of industrial and domestic effluents directly into waters before treatment should be prohibited. Installation of waste treatment plants by industries discharging pollutants should be a requirement.

(viii) Law Enforcement

To make law enforcement cost-effective it should be made a requirement for every fishermen to operate from gazetted Fish Landings. This means defined Fish Landings must first be gazetted. Sale of fish on water must also be prohibited. The Act currently empowers technical fisheries personnel, police and military personnel above the rank of Corporal as authorized officers to enforce fisheries regulations as provided for in sections 31 to 40. But since the Police and military personnel usually lack the necessary knowledge of fisheries, the law should require them to always operate side by side with fisheries personnel. The law should also encourage the fisheries communities and the public to work closely with the authorized officers in enforcing fisheries regulations. Joint participation in law enforcement would greatly reduce incidences of infringements.

The legal provisions on penalties has already been described in earlier section.

5. REGIONAL COLLABORATION

(i) Harmonization of Fisheries Legislation

Lake Victoria is shared by Kenya, Tanzania and Uganda while Lakes Albert and Edward are shared by Zaire and Uganda. All these countries bordering the lakes in the region have already recognised the importance of establishing two regional mechanisms for coordinated or joint management. Lake-specific mechanisms are required for effective collaboration.

Under the F.A.O., CIFA-Sub-Committee for Lake Victoria, the three countries are trying to formulate an intergrated fisheries policy with a single regulatory code that is applicàble within the internal legislations of each nation. Recently, FAO/UNDP IFIP Project based in Bujumbura, Burundi facilitated a consultation between Zaire and Uganda on Lakes Edward and Albert which identified areas for collaboration in the management and development of the fisheries.

In both cases, the riparian states are currently involved in

- (a) the formulation of common regulations or general conventions accompanied by detailed enforcement measures, and
- (b) the formulation of a general agreement covering all the problems related to the management of each lake basin and their fisheries.

These activities will be followed by

- (a) the adoption of a wide-ranging and very precise convention, and
- (b) the conclusion of the convention for the sole purpose of establishing a joint independent commission.

All countries are aware that the entry into agreement or the establishment of a commission does not entail the loss of rational sovereignty over the waters in question. The arguments supporting the harmonization of legislations are well known. These are:

- (a) the harmonization of regulations is a requisite for the national exploitation of the fisheries resources of the shared lakes;
- (b) the common legislation reduces the risk of harmful fishery practices and provides for a better education of the fishermen;
- (c) the harmonization of regulatory measures is an essential pre-requisite for a joint control and surveillance system, without which fishery offences cannot be prevented.
- (d) harmonized regulation provides for a more accurate assessment of fishery status by facilitating the comparison and collection of statistical data.

There are, however, three forms of obstacles to legislative harmonization that should be noted. These are:

- (a) while Uganda possesses an Anglo-Saxon legal framework, Zaire operates within the Roman Civil Law system;
- (b) the lack of biological and socio-economic knowledge on the resources and fisheries of the lakes; differences in fishing practices, type of fishing fleet and fisheries development in the four states;
- (c) the lakes are not only fishing grounds but also borders and places of communication and trade.

It is difficult, therefore, for any related agreement not to be wide-reaching.

(ii) Areas of Harmonization and Positive Law

Areas in which legislative harmonization are being examined by the bordering states while considering the prevailing

national regulations and practices include the following:

- (a) Collection and analysis of fisheries statistical data on catch, effort, costs, prices, etc.
- (b) Fisheries development and management plans for the lakes and their basins.
- (c) Fishing categories such as industrial, artisanal, customary, individual and sports relative to the diversity of fees charged.
- (d) Fishing licences with high disparity in licence fees and systems.
- (e) Fishery efforts and conservation measures with respect to number of fishing units, types, mesh-sizes of gears, minimum size limits, etc.
- (f) Introduction of non-indigenous species into the lakes.
- (g) Other water uses detrimental to fisheries, such as irrigation and manufacture which may have an impact on fisheries.
- (h) Access of a State's vessel to waters under the jurisdiction of other States which is not directly linked to the harmonization of legislations but it could be a consequence.
- (i) Status of research vessels as to whether they should be permitted free access to all parts of lakes.

Research?

6. SUMMARY

The elements of fisheries law set out in this document are conceived as integral parts of a single system. Each of them should relate to the others with the aim of reducing the burden of fisheries management while creating its effectiveness. Note is taken of whether a requirement can be complied with and enforced, whether it enforces or weakens other provisions, whether it contributes to fishermen's acceptance of the law or induces them to evade it. Fees, for example, need to be viewed in terms of their collectability, of their effects on collection of statistics

and of their effects on fishing effort.

The powers granted by the law are also considered to be sufficient to sustain the enforcement programme required for the management measures foreseen. It is believed that they do not exceed the requirements and risk making enforcement even more difficult by alienating fishermen.

Regional collaboration through harmonization of fisheries legislation is obviously desirable, although the idea is only beginning to receive attention. The working groups for Lakes Edward and Albert as well as that for Lake Victoria should be advised to expedite the formulation of a draft texts of harmonized regulations to be introduced in each State's national legislation in accordance with its legal system and its distribution of responsibilities between the proposed commissions and the national governments.

Finally, whatever the fisheries law, the ultimate effectiveness of fisheries management depends on the programmes and hard work of the fisheries administration. The law will succeed to the extent that it supports appropriate programmes and their implementation.